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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,464

06/03/2005

Shin Takahashi

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EXAMINER

HAUTH, GALEN H

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/537,464		TAKAHASHI ET AL.	
	Examiner		Art Unit	
	GALEN HAUTH		4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/03/2005, 03/23/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1-8, drawn to a sealant composition.

Group 2, claim(s) 9-13, drawn to a method of using the sealant composition.

2. The inventions listed as Groups 1 and 2 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The common technical feature of groups 1 and 2 is a sealant composition comprising a photopolymerization initiator sensitive to light with a wavelength of 380 nm or longer and an ethylenically double bond containing compound and having photo-curing properties for forming a seal section on a pleated filter. This common technical feature was found to not provide any contribution to the art as it fails to define over the prior art *a posteriori* in light of Caronia et al. (PN 5028330) in view of Takahashi et al. (PN 5300536). Due to the lack of a common **special** technical feature the two groups are subject to restriction.

3. During a telephone conversation with Mark Boland on 06/26/2008 a provisional election was made without traverse to prosecute the invention of Group 2, claims 9-13.

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 1-8 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caronia et al. (PN 5028330) in view of Takahashi et al. (PN 5300536) and Burk (PN 3142715) and evidenced by Yaws (NPL- Yaws' Handbook of Thermo and Physical Properties).

- a. With regards to claim 9, Caronia teaches a method for applying an end cap (seal) to a filter element using a photo-initiated polymer in a transparent mold by placing the end of the filter in the mold with the polymer, exposing it to ultraviolet light to cure the polymer, and stripping the mold from the finished end cap (abstract). Caronia teaches that the filter is a cylindrical filter consisting of a

circumferentially extending array of pleats tapering radially between outer tips thereof and inner tips (col 2 ln 25-28, this taken to be embraced by the limitation chrysanthemum-like cross section). Caronia teaches placing the end of the filter in the mold containing the polymer followed by UV-curing and forming an end cap (seal) (col 4 ln 42-59, placing the filter in the mold requires a groove for the filter). Caronia teaches using a photo-initiated polymer (abstract) and a glass or other transparent material for the mold (col 3 ln 31-32), but does not teach the composition of the photo-initiated polymer, or that the mold being transparent to light with a wavelength of 380 nm or higher and a solubility parameter of less than 8.5.

b. Takahashi teaches a photopolymerization composition comprising ethylenically double bond-containing compounds having photo-curing properties (col 4 ln 49-62, methacrylates are ethylenically double bond containing compounds) and a photopolymerization initiator sensitive to near ultraviolet to visible light (col 2 ln 12-16). Takahashi teaches that the composition is sensitive to light of wavelength 380 or higher by curing at wavelength 405 and 436 (col 11 ln 41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the photocurable composition of Takahashi as the photocurable composition of Caronia, because Takahashi acknowledges that composition taught is useful for a sealing agent (col 17 ln 49) and provides excellent thick film curability and a body high in hardness (col 17 ln 39-41). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to cure using a wavelength of light higher than 380 in the formation of an end cap taught by Caronia, because Takahashi teaches curing with 405 and 436 nm light. It directly follows that, in order to photo-cure the resin composition of Takahashi at wavelength of 405 and 436 nm light, it would be imperative to use a mold that is transparent at that wavelength.

c. Burk teaches using interpolymers of hexafluoropropylene and tetrafluoroethylene as apposed to glass due to the careful handling required of glass in the casting of acrylic resins, since the interpolymers are reusable and do not require an anti-sticking agent (col 1 ln 21-40). Burk teaches that the interpolymers are substantially transparent, and as such can be used for photopolymerization (col 2 ln 56-60, this is taken to mean that the interpolymers allow permeability of light in the UV and Visible light spectrum used in photopolymerization). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the interpolymers of hexafluoropropylene and tetrafluoroethylene as apposed to glass as taught by Burk for the mold used in the process of Caronia, because Caronia acknowledges the use of other transparent materials than glass (col 3 ln 34-32 of Caronia) and the interpolymers do not require an anti-sticking agent, are reusable, and do not require the careful handling that glass does (col 1 ln 20-26 of Burk). Burk teaches using an interpolymers of hexafluoropropylene and tetrafluoroethylene which have solubility parameters of 6.53 and 7.46 respectively as evidenced by Yaws' Handbook (Table: Solubility Parameter,

Liquid Volume, Dipole Moment, and Other Properties, listed as 15.26 and 13.358 $(\text{J}/\text{cm}^3)^{(1/2)}$ which converts to the standard solubility parameters of 6.53 and 7.46 with units of $(\text{cal}/\text{cm}^3)^{(1/2)}$, and as such the mold material has a solubility parameter of less than 8.5). In fact, this is identical material which is used by applicant (see claims 10-11).

d. With regards to claims 10 and 11, Burk teaches using an ethylene fluoride-propylene copolymer in an interpolymer of hexafluoropropylene and tetrafluoroethylene (col 1 ln 37-39).

e. With regards to claims 12 and 13, Takahashi teaches that a dosage of radiation applied to the composition is between 500-10000 mJ/cm^2 which is greater than 200 mJ/cm^2 at a wavelength of 380 nm or longer as Takahashi provides an example in which the composition is irradiated with 2,510 mJ/cm^2 at 405 nm (col 11 ln 13-41, irradiation for 10 seconds with 405 nm light at 251 mw/cm^2 equals 2,510 mJ/cm^2).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 9-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

f. The term "solubility parameter of 8.5 or lower" in claim 9 does not provide units for the solubility parameter which renders the claim indefinite. The units of

the parameter are not defined by the claim, the specification does not provide a unit of measurement, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention, because the units could be either $(\text{cal}/\text{cm}^3)^{(1/2)}$ or $(\text{J}/\text{cm}^3)^{(1/2)}$. For the purpose of examination the examiner has interpreted the units of the solubility parameter to be in $(\text{cal}/\text{cm}^3)^{(1/2)}$. Additionally, it is unclear what is intended by the limitation "chrysanthemum-like cylindrical filter element".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GALEN HAUTH whose telephone number is (571)270-5516. The examiner can normally be reached on Monday to Thursday 7:30am-5:00pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on (571)272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4111

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GHH/

/Sam Chuan C. Yao/
Supervisory Patent Examiner, Art Unit 4111